# Analyzing Mobile/Cellular DNI in XKEYSCORE

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DERIVED FROM: NSA/CSSM 1-52
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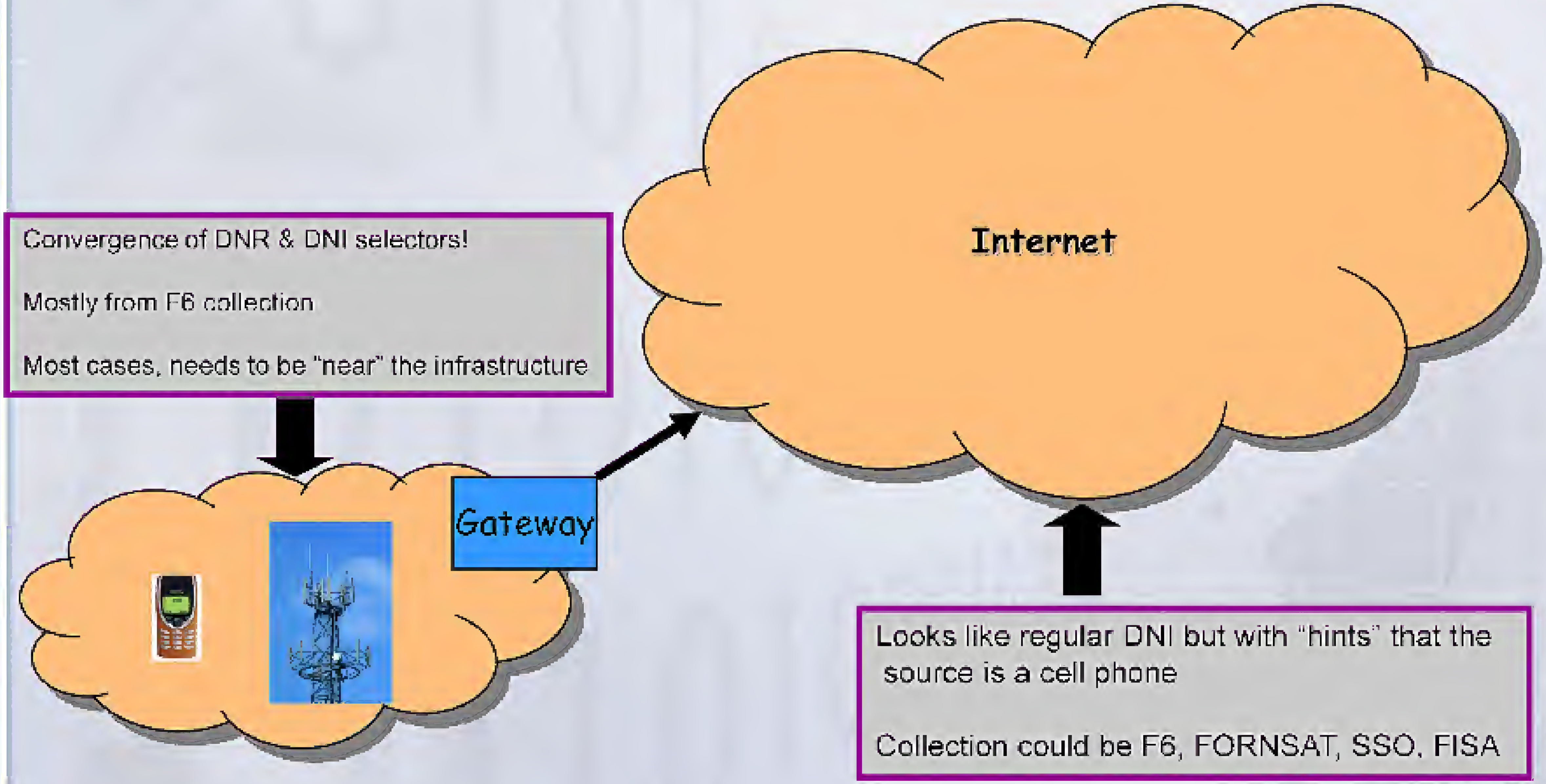
# Mobile DNI

- Mobile DNI can be described as people using their Cell Phone or cellular technology to access the Internet and E-mail
- There are essentially two “types” of collection:
  - Collection within the GPRS/3G network (i.e Abis link)
  - Collection within the public Internet (FORNSAT/F6/SSO/FISA/etc)

# Mobile DNI

- Mobile DNI Collect comes in two main types:



Convergence of DNR & DNI selectors!

Mostly from F6 collection

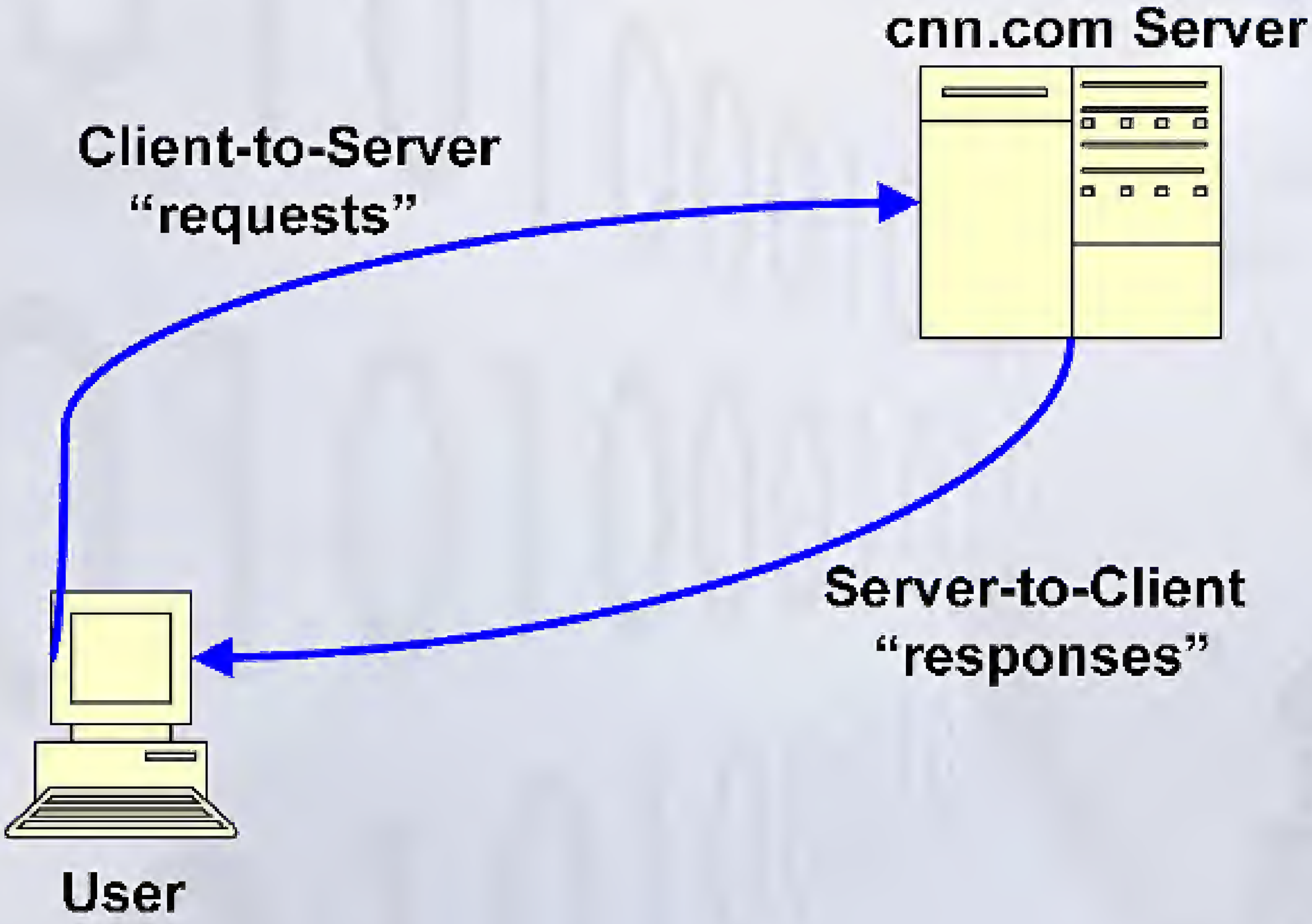
Most cases, needs to be "near" the infrastructure

Looks like regular DNI but with "hints" that the source is a cell phone

Collection could be F6, FORNSAT, SSO, FISA

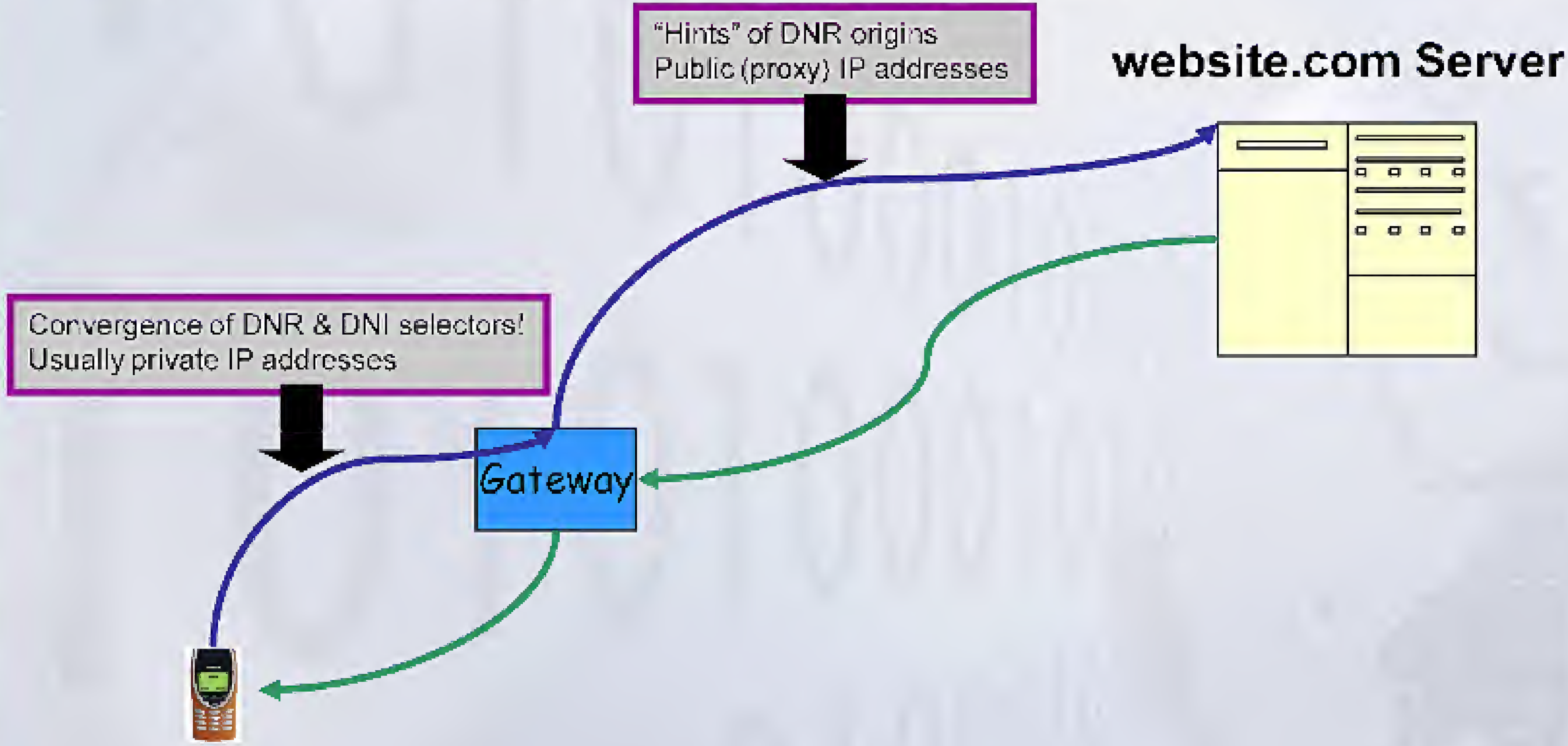
# HTTP Activity

- HTTP activity comes in two types:



# Mobile DNI: HTTP Activity

- HTTP activity comes in two types:



"Hints" of DNR origins
Public (proxy) IP addresses

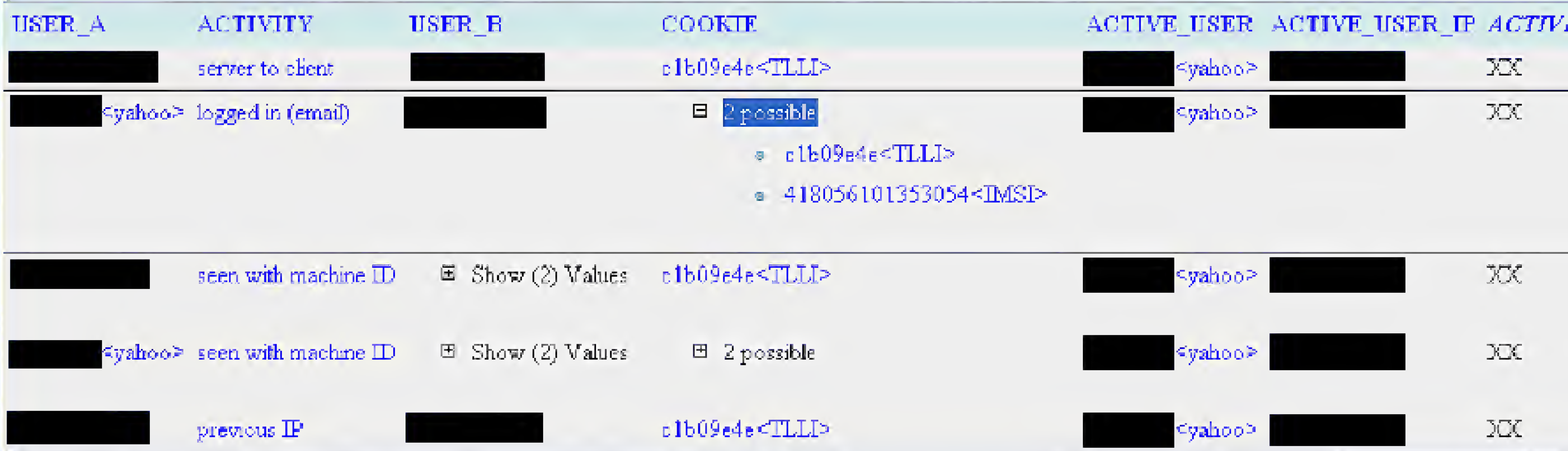
Convergence of DNR & DNI selectors!
Usually private IP addresses

# Mobile DNI: Converged collection

- Examples of “converged” collection:
  - GPRS by F6 JUGGERNAUT’s
  - WLL/CDMA by SCREAMIN (OTRS)
- All “converged” collection is put into the “Cellular DNI” plug-in of XKS which gives you the ability to query for DNI traffic based on DNR selectors (IMSI, IMEI, MSISDN, etc) where applicable

# Mobile DNI: Converged collection

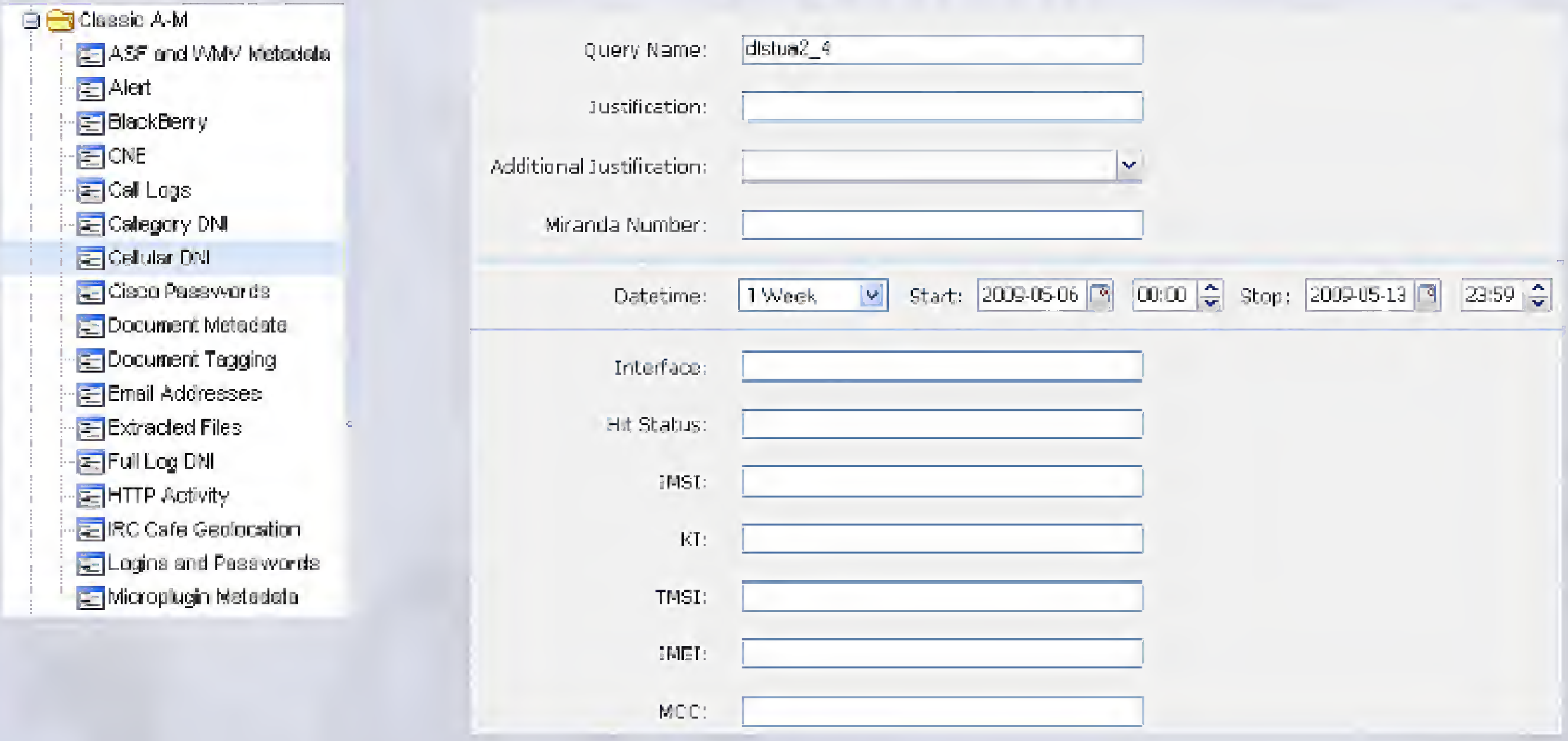
- DNR & DNI meta-data will be together:



| USER_A | ACTIVITY | USER_B | COOKIE | ACTIVE_USER | ACTIVE_USER_IP | *ACTIV* |
|---|---|---|---|---|---|---|
| [redacted] | server to client | [redacted] | c1b09e4e<TLLI> | [redacted]<yahoo> | [redacted] | XX |
| [redacted]<yahoo> | logged in (email) | [redacted] | ⊟ 2 possible<br>c1b09e4e<TLLI><br>418056101353054<IMSI> | [redacted]<yahoo> | [redacted] | XX |
| [redacted] | seen with machine ID | ⊞ Show (2) Values | c1b09e4e<TLLI> | [redacted]<yahoo> | [redacted] | XX |
| [redacted]<yahoo> | seen with machine ID | ⊞ Show (2) Values | ⊞ 2 possible | [redacted]<yahoo> | [redacted] | XX |
| [redacted] | previous IP | [redacted] | c1b09e4e<TLLI> | [redacted]<yahoo> | [redacted] | XX |

# Mobile DNI: Converged collection

- X-KEYSCORE's Cellular DNI plug-in allows you to query on the DNR selectors for Persona Analysis



Query Name: dlstua2_4

Justification:

Additional Justification:

Miranda Number:

Datetime: 1 Week Start: 2009-05-06 00:00 Stop: 2009-05-13 23:59

Interface:

Hit Status:

IMSI:

KI:

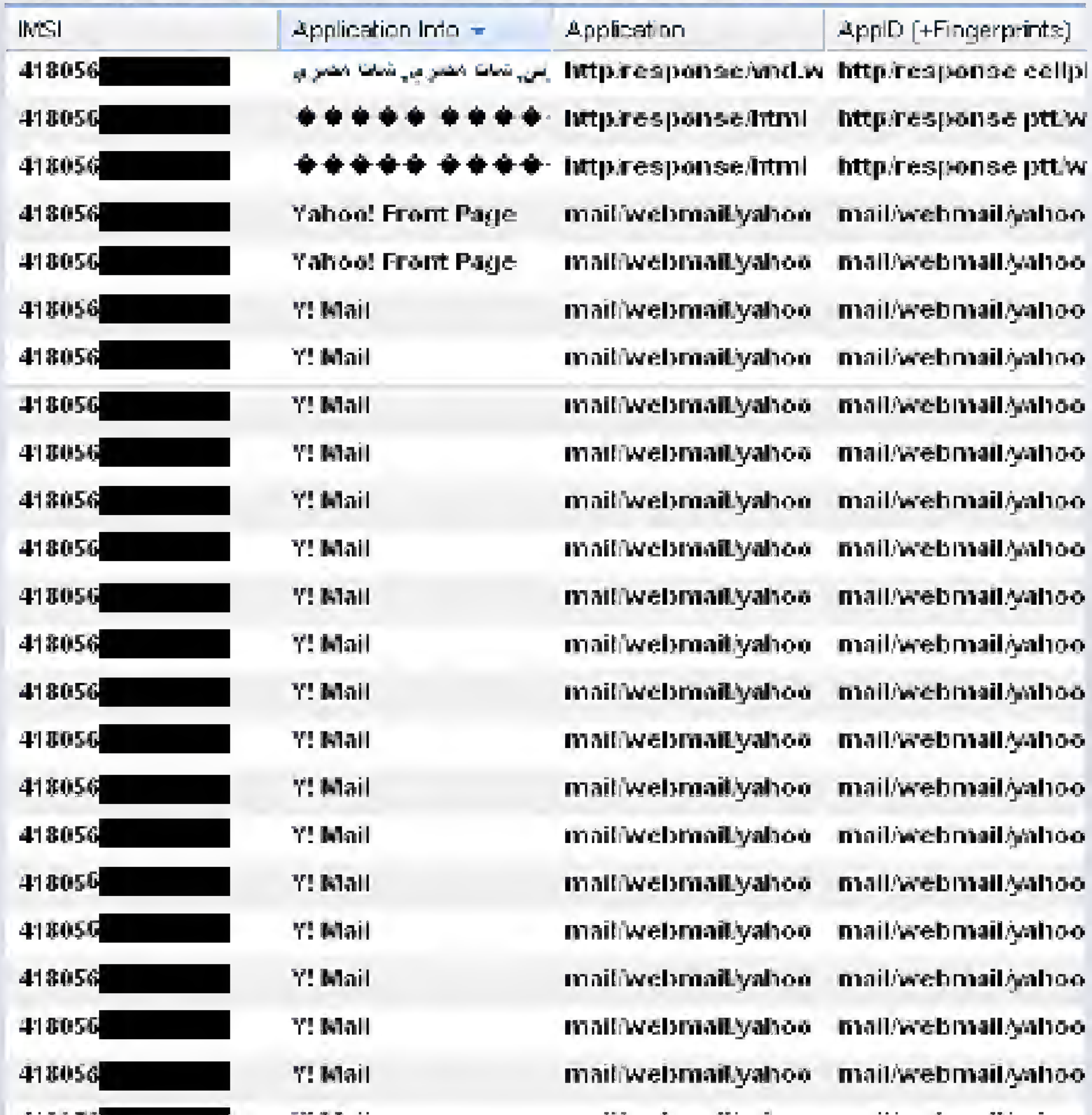
TMSI:

IMEI:

MCC:

# Mobile DNI: Converged collection

- By taking the IMSI we found in MARINA we can identify all of the DNI traffic (webmail, web-surfing etc.) that originated from that same mobile subscriber



| IMSI | Application Info | Application | AppID (+Fingerprints) |
|---|---|---|---|
| 418056[redacted] | بي شات مصري في شات مصري | http.response/vnd.w | http.response cellpl |
| 418056[redacted] | ◆◆◆◆◆ ◆◆◆◆ | http.response/html | http.response ptt/w |
| 418056[redacted] | ◆◆◆◆◆ ◆◆◆◆ | http.response/html | http.response ptt/w |
| 418056[redacted] | Yahoo! Front Page | mail/webmail/yahoo | mail/webmail/yahoo |
| 418056[redacted] | Yahoo! Front Page | mail/webmail/yahoo | mail/webmail/yahoo |
| 418056[redacted] | Y! Mail | mail/webmail/yahoo | mail/webmail/yahoo |
| 418056[redacted] | Y! Mail | mail/webmail/yahoo | mail/webmail/yahoo |
| 418056[redacted] | Y! Mail | mail/webmail/yahoo | mail/webmail/yahoo |
| 418056[redacted] | Y! Mail | mail/webmail/yahoo | mail/webmail/yahoo |
| 418056[redacted] | Y! Mail | mail/webmail/yahoo | mail/webmail/yahoo |
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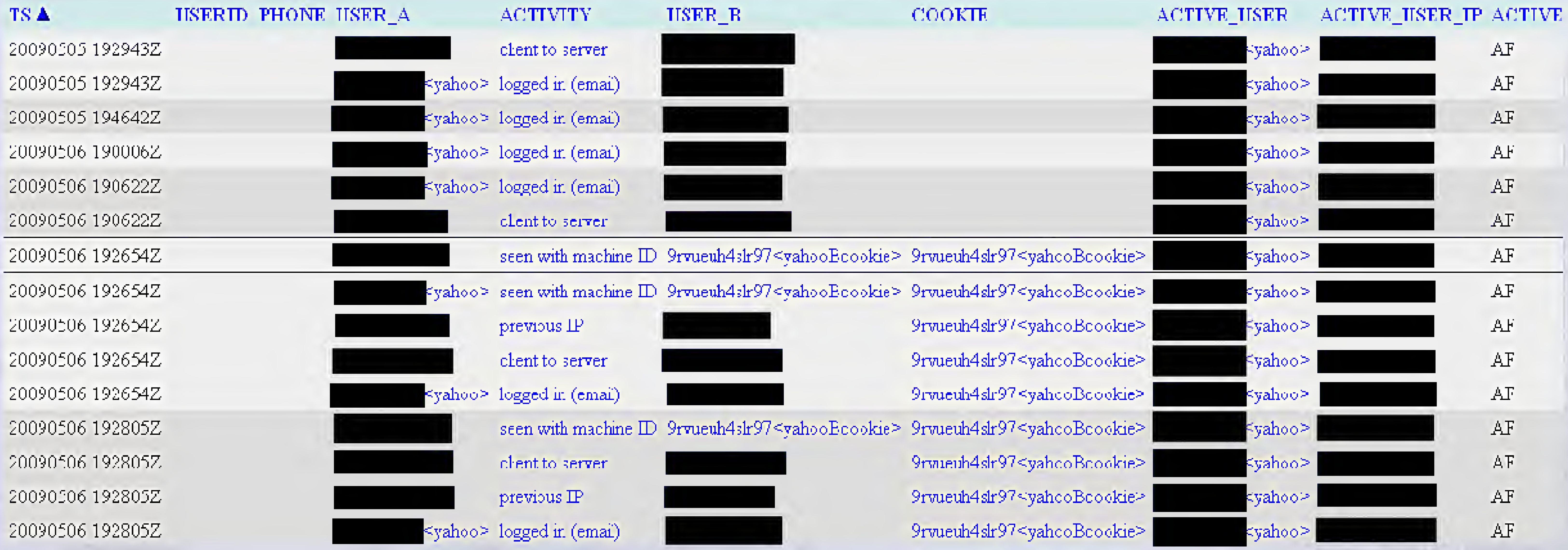
| 418056[redacted] | Y! Mail | mail/webmail/yahoo | mail/webmail/yahoo |
| 418056[redacted] | Y! Mail | mail/webmail/yahoo | mail/webmail/yahoo |
| 418056[redacted] | Y! Mail | mail/webmail/yahoo | mail/webmail/yahoo |
| 418056[redacted] | Y! Mail | mail/webmail/yahoo | mail/webmail/yahoo |
| 418056[redacted] | Y! Mail | mail/webmail/yahoo | mail/webmail/yahoo |
| 418056[redacted] | Y! Mail | mail/webmail/yahoo | mail/webmail/yahoo |
| 418056[redacted] | Y! Mail | mail/webmail/yahoo | mail/webmail/yahoo |
| 418056[redacted] | Y! Mail | mail/webmail/yahoo | mail/webmail/yahoo |
| 418056[redacted] | Y! Mail | mail/webmail/yahoo | mail/webmail/yahoo |
| 418056[redacted] | Y! Mail | mail/webmail/yahoo | mail/webmail/yahoo |

# Mobile DNI: Traditional Collection

- After the DNI traffic exits the GPRS/WLL/CDMA Gateway, it will travel over the public Internet and can be collected through "traditional" DNI accesses like FORNSAT, F6, SSO, FISA etc.

# Mobile DNI: Traditional Collection

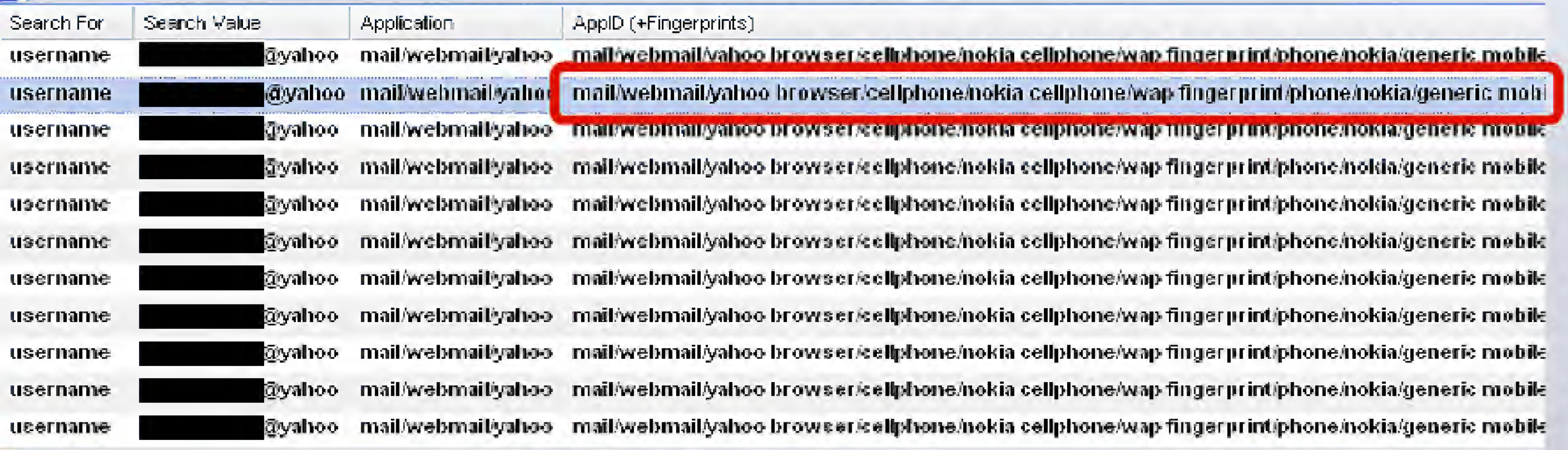
- Sometimes its difficult to tell if your target is using a cell phone to access his E-mail
- MARINA currently provides little or no “hints”



| TS ▲ | USERID | PHONE | USER_A | ACTIVITY | USER_B | COOKIE | ACTIVE_USER | ACTIVE_USER_IP | ACTIVE |
|---|---|---|---|---|---|---|---|---|---|
| 20090505 192943Z | | | [redacted] | client to server | [redacted] | | [redacted]<yahoo> | [redacted] | AF |
| 20090505 192943Z | | | [redacted]<yahoo> | logged in (email) | [redacted] | | [redacted]<yahoo> | [redacted] | AF |
| 20090505 194642Z | | | [redacted]<yahoo> | logged in (email) | [redacted] | | [redacted]<yahoo> | [redacted] | AF |
| 20090506 190006Z | | | [redacted]<yahoo> | logged in (email) | [redacted] | | [redacted]<yahoo> | [redacted] | AF |
| 20090506 190622Z | | | [redacted]<yahoo> | logged in (email) | [redacted] | | [redacted]<yahoo> | [redacted] | AF |
| 20090506 190622Z | | | [redacted] | client to server | [redacted] | | [redacted]<yahoo> | [redacted] | AF |
| 20090506 192654Z | | | [redacted] | seen with machine ID | 9rvueuh4slr97<yahooBcookie> | 9rvueuh4slr97<yahooBcookie> | [redacted]<yahoo> | [redacted] | AF |
| 20090506 192654Z | | | [redacted]<yahoo> | seen with machine ID | 9rvueuh4slr97<yahooBcookie> | 9rvueuh4slr97<yahooBcookie> | [redacted]<yahoo> | [redacted] | AF |
| 20090506 192654Z | | | [redacted] | previous IP | [redacted] | 9rvueuh4slr97<yahooBcookie> | [redacted]<yahoo> | [redacted] | AF |
| 20090506 192654Z | | | [redacted] | client to server | [redacted] | 9rvueuh4slr97<yahooBcookie> | [redacted]<yahoo> | [redacted] | AF |
| 20090506 192654Z | | | [redacted]<yahoo> | logged in (email) | [redacted] | 9rvueuh4slr97<yahooBcookie> | [redacted]<yahoo> | [redacted] | AF |
| 20090506 192805Z | | | [redacted] | seen with machine ID | 9rvueuh4slr97<yahooBcookie> | 9rvueuh4slr97<yahooBcookie> | [redacted]<yahoo> | [redacted] | AF |
| 20090506 192805Z | | | [redacted] | client to server | [redacted] | 9rvueuh4slr97<yahooBcookie> | [redacted]<yahoo> | [redacted] | AF |
| 20090506 192805Z | | | [redacted] | previous IP | [redacted] | 9rvueuh4slr97<yahooBcookie> | [redacted]<yahoo> | [redacted] | AF |
| 20090506 192805Z | | | [redacted]<yahoo> | logged in (email) | [redacted] | 9rvueuh4slr97<yahooBcookie> | [redacted]<yahoo> | [redacted] | AF |

# Mobile DNI: Traditional Collection

- X-KEYSCORE "User Activity" provides *some* hints
- Note the fingerprint of browser/cellphone/nokia

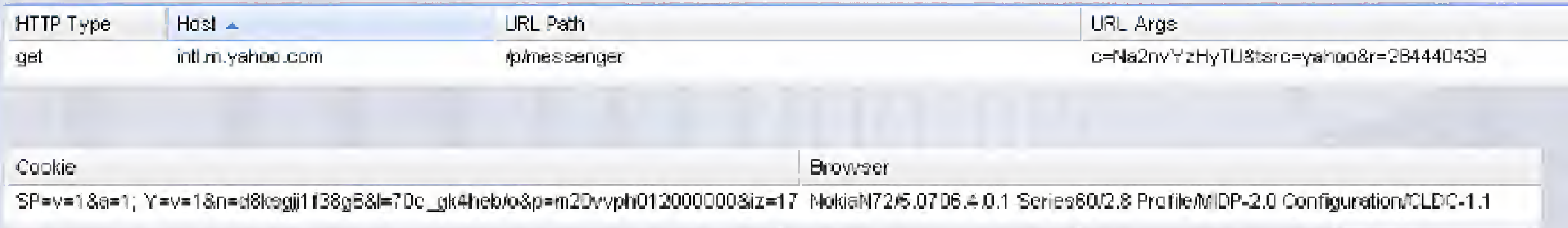


| Search For | Search Value | Application | AppID (+Fingerprints) |
|---|---|---|---|
| username | [redacted]@yahoo | mail/webmail/yahoo | mail/webmail/yahoo browser/cellphone/nokia cellphone/wap fingerprint/phone/nokia/generic mobile |
| username | [redacted]@yahoo | mail/webmail/yaho | mail/webmail/yahoo browser/cellphone/nokia cellphone/wap fingerprint/phone/nokia/generic mobi |
| username | [redacted]@yahoo | mail/webmail/yahoo | mail/webmail/yahoo browser/cellphone/nokia cellphone/wap fingerprint/phone/nokia/generic mobile |
| username | [redacted]@yahoo | mail/webmail/yahoo | mail/webmail/yahoo browser/cellphone/nokia cellphone/wap fingerprint/phone/nokia/generic mobile |
| username | [redacted]@yahoo | mail/webmail/yahoo | mail/webmail/yahoo browser/cellphone/nokia cellphone/wap fingerprint/phone/nokia/generic mobile |
| username | [redacted]@yahoo | mail/webmail/yahoo | mail/webmail/yahoo browser/cellphone/nokia cellphone/wap fingerprint/phone/nokia/generic mobile |
| username | [redacted]@yahoo | mail/webmail/yahoo | mail/webmail/yahoo browser/cellphone/nokia cellphone/wap fingerprint/phone/nokia/generic mobile |
| username | [redacted]@yahoo | mail/webmail/yahoo | mail/webmail/yahoo browser/cellphone/nokia cellphone/wap fingerprint/phone/nokia/generic mobile |
| username | [redacted]@yahoo | mail/webmail/yahoo | mail/webmail/yahoo browser/cellphone/nokia cellphone/wap fingerprint/phone/nokia/generic mobile |
| username | [redacted]@yahoo | mail/webmail/yahoo | mail/webmail/yahoo browser/cellphone/nokia cellphone/wap fingerprint/phone/nokia/generic mobile |
| username | [redacted]@yahoo | mail/webmail/yahoo | mail/webmail/yahoo browser/cellphone/nokia cellphone/wap fingerprint/phone/nokia/generic mobile |

# Mobile DNI: Traditional Collection

- X-KEYSCORE "HTTP Activity" also provides some hints!
- Note the hostname of intl.m.yahoo.com and user agent of:

NokiaN72/5.0706.4.0.1 Series60/2.8 Profile/MIDP-2.0 Configuration/CLDC-1.1

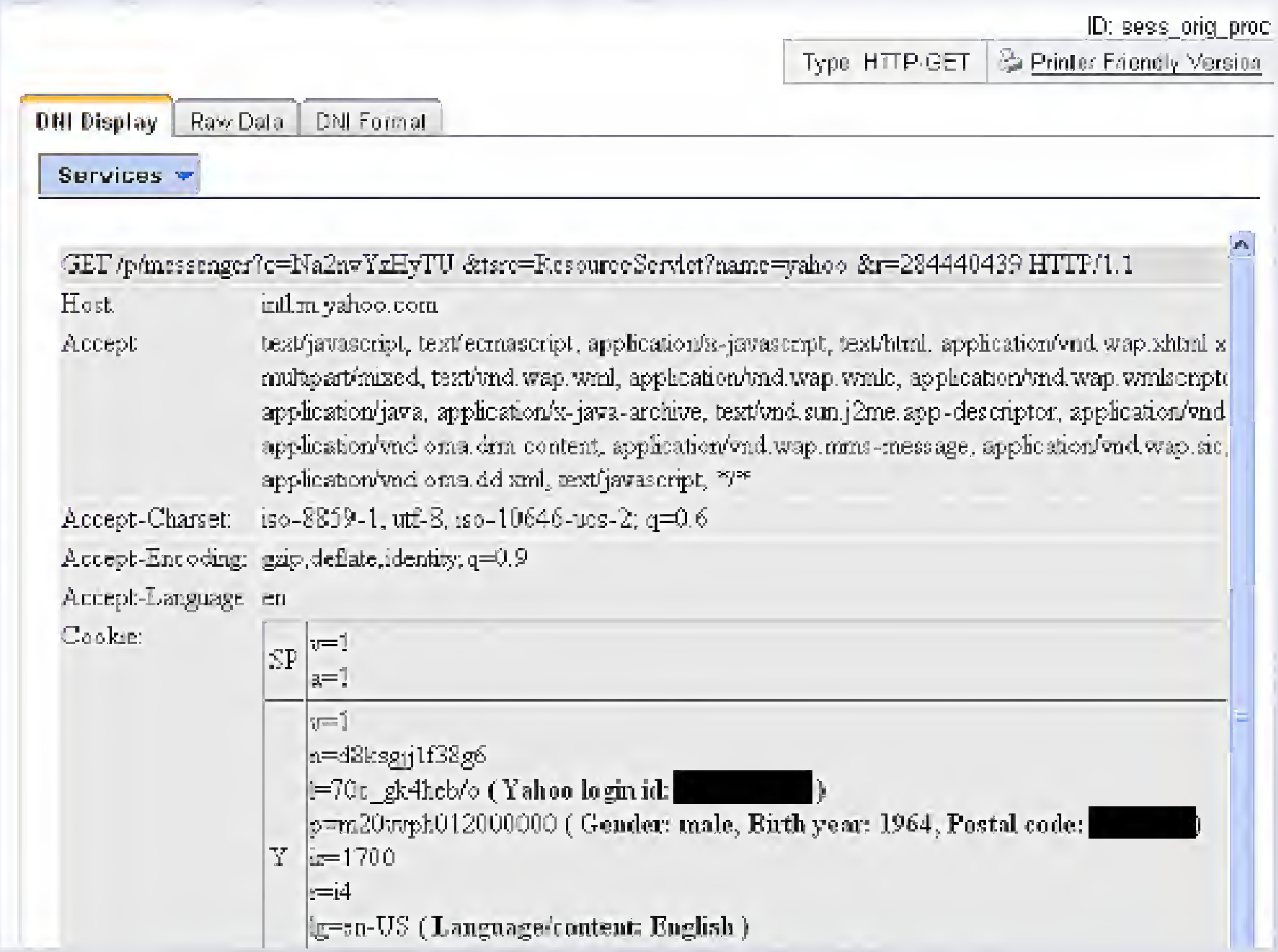


| HTTP Type | Host ▲ | URL Path | URL Args |
|---|---|---|---|
| get | intl.m.yahoo.com | /p/messenger | c=Na2nvYzHyTU&tsrc=yahoo&r=284440439 |

| Cookie | Browser |
|---|---|
| SP=v=1&a=1; Y=v=1&n=d8kogjj1f38g5&l=70c_gk4heb/o&p=m20vvph012000000&iz=17 | NokiaN72/5.0706.4.0.1 Series60/2.8 Profile/MIDP-2.0 Configuration/CLDC-1.1 |

# Mobile DNI: Traditional Collection

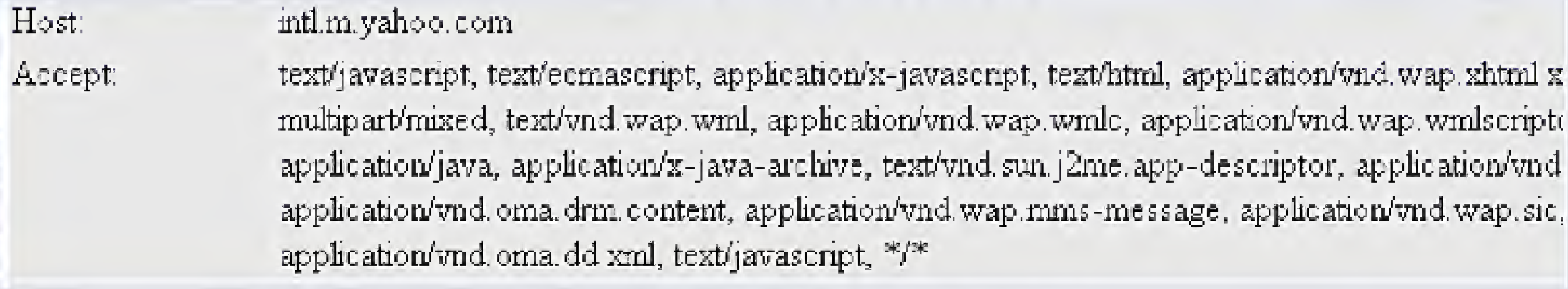
## The content also provides some “hints”



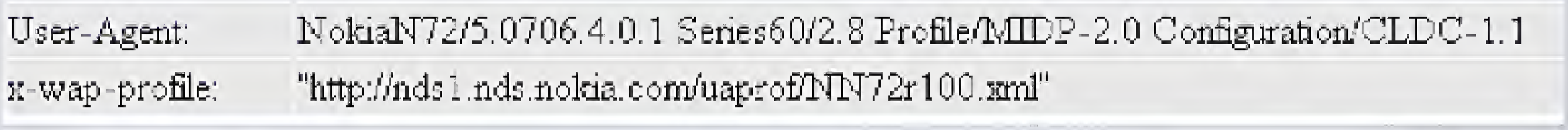
```
GET /p/messenger?c=Na2nvYzHyTU &tsrc=ResourceServlet?name=yahoo &r=284440439 HTTP/1.1
Host:              intl.m.yahoo.com
Accept:            text/javascript, text/ecmascript, application/x-javascript, text/html, application/vnd.wap.xhtml x
                   multipart/mixed, text/vnd.wap.wml, application/vnd.wap.wmlc, application/vnd.wap.wmlscriptc
                   application/java, application/x-java-archive, text/vnd.sun.j2me.app-descriptor, application/vnd
                   application/vnd.oma.drm.content, application/vnd.wap.mms-message, application/vnd.wap.sic,
                   application/vnd.oma.dd.xml, text/javascript, */*
Accept-Charset:    iso-8859-1, utf-8, iso-10646-ucs-2; q=0.6
Accept-Encoding:   gzip,deflate,identity; q=0.9
Accept-Language:   en
Cookie:         SP  v=1
                    a=1
                Y   v=1
                    n=d8ksgjj1f38g6
                    l=70r_gk4hcb/o ( Yahoo login id: [redacted] )
                    p=m20wph012000000 ( Gender: male, Birth year: 1964, Postal code: [redacted] )
                    ir=1700
                    r=i4
                    lg=en-US ( Language/content: English )
```

# HTTP Activity Examples

## The content also provides some “hints”



| | |
|---|---|
| Host: | intl.m.yahoo.com |
| Accept: | text/javascript, text/ecmascript, application/x-javascript, text/html, application/vnd.wap.xhtml x multipart/mixed, text/vnd.wap.wml, application/vnd.wap.wmlc, application/vnd.wap.wmlscriptc application/java, application/x-java-archive, text/vnd.sun.j2me.app-descriptor, application/vnd application/vnd.oma.drm.content, application/vnd.wap.mms-message, application/vnd.wap.sic, application/vnd.oma.dd xml, text/javascript, */* |



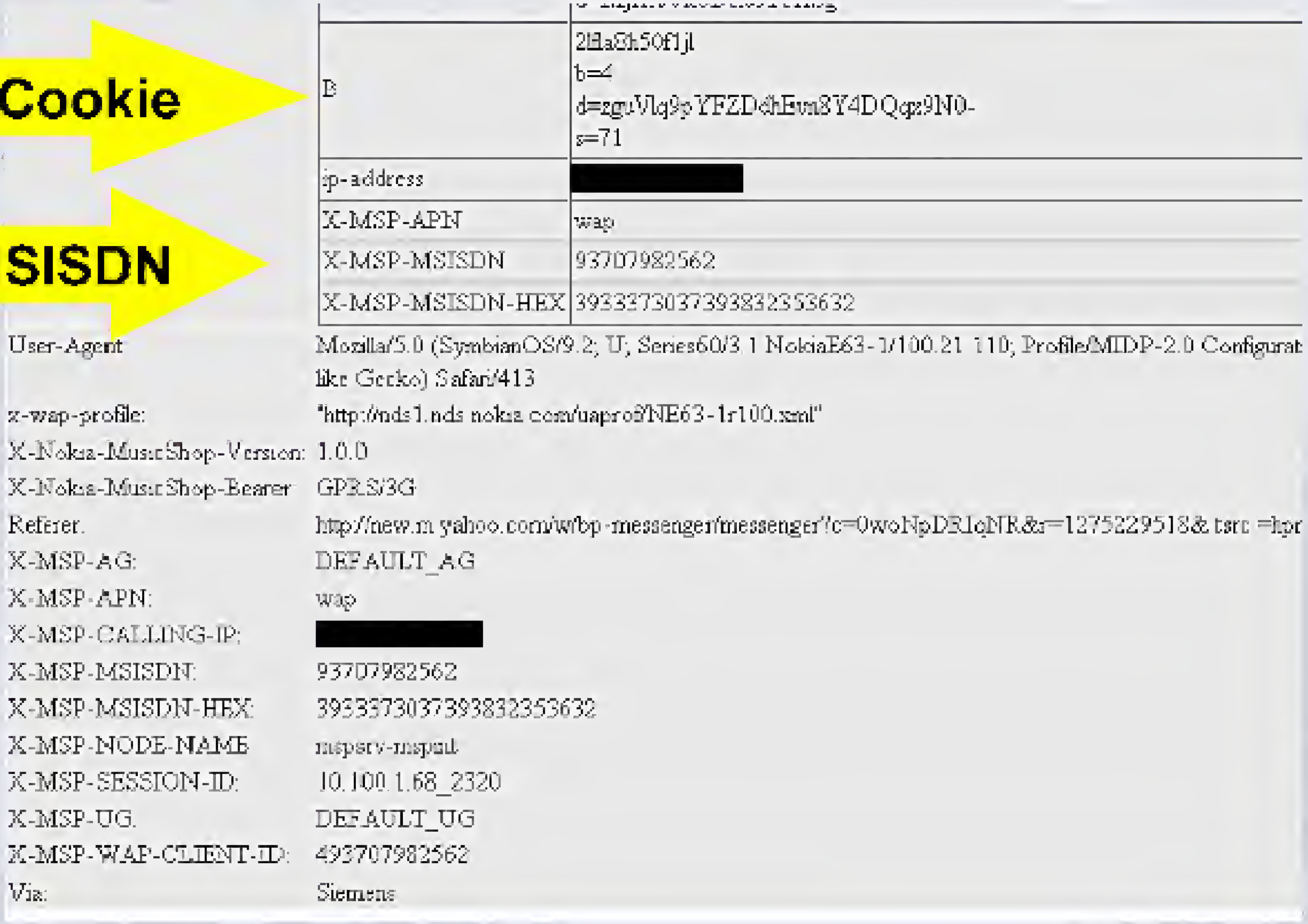
| | |
|---|---|
| User-Agent: | NokiaN72/5.0706.4.0.1 Series60/2.8 Profile/MIDP-2.0 Configuration/CLDC-1.1 |
| x-wap-profile: | "http://nds1.nds.nokia.com/uaprof/NN72r100.xml" |

# Mobile DNI: Traditional Collection

## Sometimes there are even more “hints”

Yahoo B Cookie

MSISDN

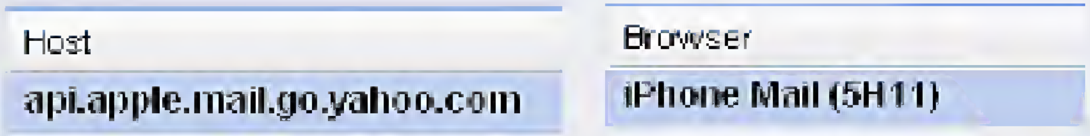


| | |
|---|---|
| B | 2lHa8h50f1jl<br>b=4<br>d=zguVlq9pYFZDdhEvn8Y4DQqz9N0-<br>s=71 |
| ip-address | [redacted] |
| X-MSP-APN | wap |
| X-MSP-MSISDN | 93707982562 |
| X-MSP-MSISDN-HEX | 3933373037393832353632 |

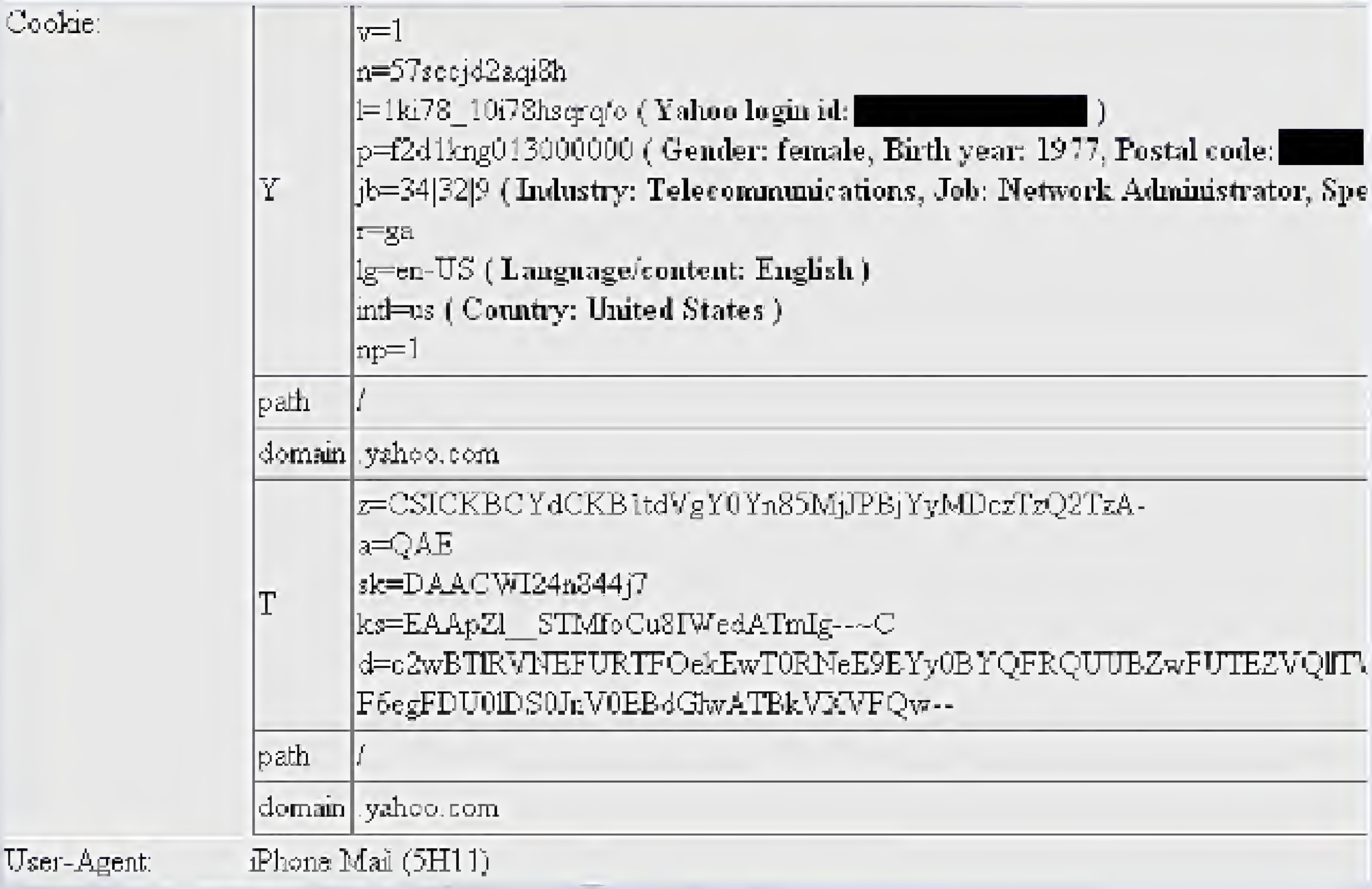
| | |
|---|---|
| User-Agent | Mozilla/5.0 (SymbianOS/9.2; U; Series60/3.1 NokiaE63-1/100.21.110; Profile/MIDP-2.0 Configurat<br>like Gecko) Safari/413 |
| x-wap-profile: | "http://nds1.nds.nokia.com/uaprof/NE63-1r100.xml" |
| X-Nokia-MusicShop-Version: | 1.0.0 |
| X-Nokia-MusicShop-Bearer | GPRS/3G |
| Referer: | http://new.m.yahoo.com/w/bp-messenger/messenger?c=0woNpDR1qNR&r=1275229518&.tsrc=hpr |
| X-MSP-AG: | DEFAULT_AG |
| X-MSP-APN: | wap |
| X-MSP-CALLING-IP: | [redacted] |
| X-MSP-MSISDN: | 93707982562 |
| X-MSP-MSISDN-HEX: | 3933373037393832353632 |
| X-MSP-NODE-NAME | mspsrv-mspal |
| X-MSP-SESSION-ID: | 10.100.1.68_2320 |
| X-MSP-UG: | DEFAULT_UG |
| X-MSP-WAP-CLIENT-ID: | 493707982562 |
| Via: | Siemens |

# HTTP Activity Examples

## IPhone Users!



| Host | Browser |
|---|---|
| api.apple.mail.go.yahoo.com | iPhone Mail (5H11) |



| | | |
|---|---|---|
| Cookie: | Y | v=1<br>n=57sccjd2aqi8h<br>l=1ki78_10i78hscrq/o ( **Yahoo login id:** [redacted] )<br>p=f2d1kng013000000 ( **Gender: female, Birth year: 1977, Postal code:** [redacted]<br>jb=34\|32\|9 ( **Industry: Telecommunications, Job: Network Administrator, Spe**<br>r=ga<br>lg=en-US ( **Language/content: English** )<br>intl=us ( **Country: United States** )<br>np=1 |
| | path | / |
| | domain | .yahoo.com |
| | T | z=CSICKBCYdCKB1tdVgY0Yn85MjJPBjYyMDczTzQ2TzA-<br>a=QAE<br>sk=DAACWI24n844j7<br>ks=EAApZl__STMfoCu8IWedATmIg---C<br>d=c2wBTlRVNEFURTFOekEwT0RNeE9EYy0BYQFRQUUBZwFUTEZVQlIT<br>F6egFDU0lDS0JnV0EBdGlwATBkVXVFQw-- |
| | path | / |
| | domain | .yahoo.com |
| User-Agent: | iPhone Mail (5H11) | |